

Adobe® Intelligent Document Platform and IBM WebSphere: A Technical Brief

Executive Summary

The Adobe and IBM vision of an *on-demand* business is an enterprise whose business processes—integrated end to end across the company and with key partners, suppliers, and customers—respond with flexibility and speed to any customer demand, market opportunity, or threat. The Adobe and IBM partnership helps on-demand businesses integrate documents into business processes by automating and accelerating the flow of business-critical information among employees, customers, suppliers, and constituents.

Adobe and IBM have optimized the Adobe Intelligent Document Platform for the IBM® WebSphere® software platform. WebSphere provides a suite of middleware products based on open standards, and includes WebSphere Business Integration solutions targeted for specific industries including banking, insurance, and government. The comprehensive integration platform connects, models, monitors, and manages processes and applications across the extended enterprise. At the core of the WebSphere platform is WebSphere Application Server, a fast, scalable, and reliable server based on Sun™ Java™ 2 Enterprise Edition (J2EE™) technology that enables enterprises to deploy, integrate, and manage dynamic e-business applications.

The Adobe Intelligent Document Platform extends the value of WebSphere, allowing more people to interact with business information and processes. In addition to optimizing the Adobe platform for WebSphere, Adobe has also integrated Adobe Designer within WebSphere Studio to reduce the need for custom Java application interfaces. Instead, developers use forms that are simpler to design.

This technical brief describes the components and key capabilities of this joint solution, and how the Adobe Intelligent Document Platform for IBM WebSphere works.

Integrating Intelligent Documents into Core Business Processes

Business success depends on effective communication and customer satisfaction. However, in meeting these goals, most organizations face challenges such as:

- Reducing costs by getting the most value out of existing IT assets and resources
- Improving efficiencies by automating traditional paper-based processes and integrating user-friendly, interactive documents with core enterprise systems
- Extending secure, universal access of business-critical information to customers, partners, suppliers, and constituents
- Becoming more responsive to improve customer satisfaction
- Sharing information stored in documents across multiple business systems

Too often, inefficient processes frustrate customers, partners, and employees. The information in paper documents used with these processes is not readily available for use in enterprise applications without some form of data capture that increases costs and decreases efficiency. Documents are an important part of electronic processes, and organizations need to include documents in the business processes that connect people, systems, and information both within the organization and throughout the entire value chain.

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To meet the challenges of effective communication and customer satisfaction, enterprises must:

- *Provide better customer service with personalized communication and self-service.* Every organization has to provide better service; it's a key differentiator that can determine an organization's ability to acquire, retain, cross-sell, and up-sell customers. Organizations can make the information in documents more quickly available for processes involving customers or constituents, enabling customer self-service and personalization while also simplifying and securing the process of gathering the information.
- *Improve efficiencies.* Enterprises are looking for ways to lower the cost of doing business; to reduce per-transaction costs, manual processes, errors, and cycle times; to speed time to market; and to improve decision-making. To improve efficiencies, enterprises want to automate as many business processes as possible. They need to ensure fast, high-quality data collection and data exchange across the enterprise to avoid the costly process of re-keying and verifying information.
- *Accelerate business processes.* To reduce the time it takes to obtain document approvals and signatures, enterprises can integrate forms with core systems and improve employee productivity.
- *Automate and secure the processes involved in complying with regulations.* Enterprises are looking to minimize business and financial risks, and at the same time, to streamline industry and government compliance reporting. Organizations also need to protect document authenticity and integrity and keep information confidential even outside the firewall.

For example, faced with severe competition for customers, banking and financial institutions must offer new services—including cost-saving self-service options via the Internet. Insurance companies need to move business processes online to support remote agents. Government agencies need to reduce costs while also improving services and meeting deadlines in response to constituent demands or legislative mandates.

With the availability of the Adobe Intelligent Document Platform optimized for IBM WebSphere, documents are integrated with the very IT infrastructure and enterprise applications that streamline and automate business processes. This common technology platform allows organizations to achieve improved efficiency, better communications with constituents, and more responsiveness. Integration between components of the Adobe Intelligent Document Platform and WebSphere help IBM customers extend the value of their IBM middleware investments.

With the Adobe Intelligent Document Platform and the WebSphere software platform, enterprises can:

- *Maximize returns on existing enterprise infrastructure investments.* The WebSphere software platform—an infrastructure for business integration, development, and business portals—provides the ideal foundation for the Adobe Intelligent Document Platform. WebSphere provides the infrastructure to connect core systems and the information in those systems. Intelligent Documents enable more people to interact with business information and processes.
- *Get better business insight and make decisions faster.* Organizations can automate Web-based workflows and accelerate access to important information for faster, better decision-making.
- *Improve customer service and responsiveness.* Enterprises can offer more customer service options on the Web and respond more quickly to customer requests.
- *Increase customer loyalty.* Organizations can easily create new Web-based services and customer self-service options, and automate form-filling while offering an easy-to-use, paper-like interface.
- *Enable secure collaboration beyond the enterprise with document- and system-level security.* Organizations can protect information with digital signatures and ensure the authenticity of documents as well as strengthen customer, partner, and constituent relationships by preventing unauthorized access.
- *Facilitate regulatory compliance.* Organizations can streamline and simplify process compliance and quickly and cost-effectively deploy forms online for easier data capture, more accurate and secure information gathering and distribution, and more complete reporting online or on paper. Organizations can also ensure that compliance rules are enforced inside and outside the firewall through the combination of Adobe document control and security capabilities and robust system-level security provided by WebSphere.

- *Reduce overhead costs.* Enterprises can drive down costs of paper printing, storing, archiving, securing, and distributing, and also simplify form design and reduce need for expensive, time-consuming Java development. The solution offers a single development environment—versus multiple islands of tools—to lower development and training costs and increase developer productivity, as well as the free Adobe Reader® universal client to lower desktop software deployment costs.

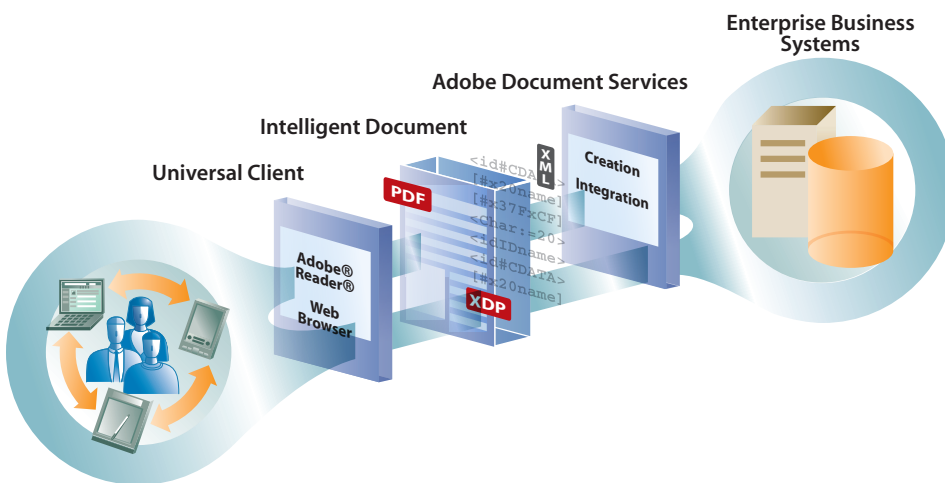
Solution Overview

Optimized for WebSphere, the Adobe Intelligent Document Platform enables enterprises to communicate more effectively, automate document-based processes, access systems offline, share information securely, and exchange data and information with people and systems.

Overview of the Adobe Intelligent Document Platform

The Adobe Intelligent Document Platform enables enterprises to securely extend the power and reach of existing enterprise applications by leveraging the universal nature of Adobe Reader software and Web browsers. Using the platform, a company can improve customer satisfaction, speed time to market, and extend the value of investments in enterprise applications to gain a competitive advantage.

The solutions in the platform are built on a secure and flexible architecture that extends the power and reach of enterprise applications inside and outside the firewall. The platform leverages Adobe Document Services to create Intelligent Documents and integrate them into business processes.



The Adobe Intelligent Document Platform
The Adobe Intelligent Document Platform consists of Intelligent Documents, universal clients, and Adobe Document Services.

The platform enables enterprises to:

- Create high-quality, ad hoc documents from the desktop or dynamically from enterprise applications
- Collaborate with internal and external people while maintaining the visual fidelity and integrity of the original source documents
- Capture data more securely through electronic forms, even when working offline
- Automate and manage processes that are not managed by core systems

The Adobe Intelligent Document Platform consists of Intelligent Documents, universal clients, and Adobe Document Services. A *universal client* is a universally available interface or access point between people and Intelligent Documents. Organizations can take advantage of the widely used and freely available Adobe Reader universal client for using the Portable Document Format (PDF), to streamline their communications and interactions and deliver new value to their customers through document-based process extensions over the Web.

PDF provides a familiar look and feel that makes electronic documents as easy to use as paper. At the same time, PDF makes it easy for companies to cost-effectively comply with frequently changing regulations that dictate both the structure and content of forms and other documents, and support long-term archiving to meet legal and organizational requirements.

PDF is the basis for Intelligent Documents, which are dynamic documents, familiar and easy to use, that can interact with core applications and integrate people into business processes. Intelligent Documents provide the following:

- Content-rich, visually rich electronic documents that look exactly like the paper documents they replace
- Business logic that enables enterprises to manage digital rights and embed business logic—such as calculations and validations—directly into documents
- eXtensible Markup Language (XML) transport and schema support, which allows organizations to exchange data among different enterprise systems so that disparate systems can work with and respond to user inputs and process interactions as they occur

The quality of information in core business systems improves when the systems receive data directly from customers via Intelligent Documents. Manual work-arounds are reduced or eliminated because Intelligent Documents are connected to back-office applications. The ability to embed business logic into documents empowers enterprises to control security at the document level. An Intelligent Document can be the record of a transaction from the time it is initiated until it is archived.

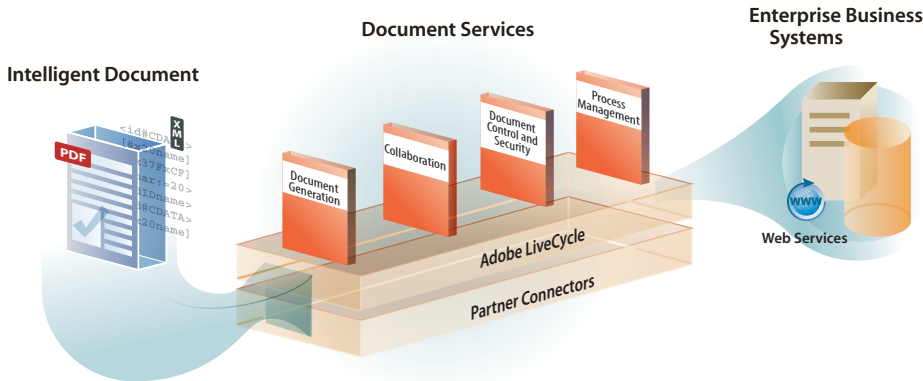
Adobe Document Services manage the complete document life-cycle by providing the ability to manage the creation and integration of documents. Adobe Document Services unlock the power and extend the reach of data—leveraging native XML and PDF to integrate documents into the IT environment—without sacrificing document integrity.

Adobe Document Services comprise the following services:

- Document generation for dynamically generating high-quality, Intelligent Documents from core enterprise applications, merging multiple file formats and XML data with dynamic templates, to generate intelligent documents in batch or real-time
- Collaboration for multiple people working together to create, review, and markup documents and exchange business-critical information more securely and efficiently
- Process management for automating document-based workflows and accelerating access to business-critical information. Enterprises can automate data capture and streamline business processes inside and outside core systems
- Document control and security for controlling access to business-critical information and certifying document authenticity with digital signatures

Adobe Document Services are delivered by Adobe LiveCycle, the new J2EE line of server and design tools software. Adobe LiveCycle products included in the solution are:

- Adobe Designer—a Microsoft® Windows®-compatible graphical design tool for designing and laying out form templates
- Adobe Form Server—an application that serves forms in PDF or HTML format and manages server-side form interactions and submission processes
- Adobe Document Server for Reader Extensions—an optional part of the solution that allows enterprises to leverage the free Adobe Reader software to deliver advanced electronic forms over the Web



The components of Adobe Document Services

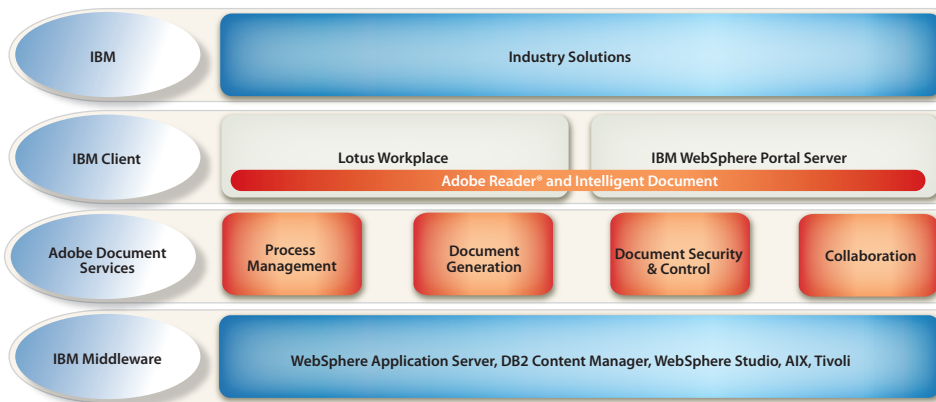
Adobe Document Services merge multiple file formats and data with templates to generate Intelligent Documents. Adobe Form Server serves forms in PDF or HTML format and manages server-side form interactions and submission processes. With Adobe Document Server for Reader Extensions, enterprises can leverage the free Adobe Reader software to deliver electronic forms over the Web.

Overview of IBM WebSphere

IBM offers a full suite of robust, highly scalable infrastructure solutions that are among the most widely used enterprise applications on the market today. The IBM WebSphere software platform is a suite of middleware products based on open standards, with targeted industry solutions in vertical markets including banking, insurance, and government. WebSphere industry solutions help companies integrate software applications and automate business processes to increase operational efficiencies and enhance business flexibility. The solutions help integrate processes across custom and packaged applications, connect the processes with suppliers and customers, monitor the business processes, and manage the performance of the business.

The WebSphere software platform employs the WebSphere Application Server, a fast, scalable, and reliable server based on J2EE technology. The WebSphere Application Server enables enterprises to deploy, integrate, and manage dynamic e-business applications. WebSphere is the premier Java and Web services technology-based application platform for integrating enterprise data and transactions with the dynamic e-business world. It provides a rich, e-business application deployment environment with a complete set of application services including capabilities for transaction management, security, clustering, performance, availability, connectivity, and scalability. WebSphere Application Server includes powerful Web services for interoperability and business-to-business (B2B) applications, a rich set of open standards implementations, and virtually any-to-any connectivity with transaction management and application adaptivity.

An enterprise can use the WebSphere infrastructure to run mission-critical business processes. WebSphere supports a wide range of scenarios, from simple administration of a single server to a clustered, highly available, high-volume environment with edge-of-network services. These specialized configuration options give an enterprise the flexibility to respond to an ever-changing marketplace—without the cost of migrating to a different technology base.



Adobe Document Services extend IBM middleware solutions

Adobe Document Services reside above the IBM middleware application stack and can also be embedded within such applications as Lotus Workplace and WebSphere Portal Server. Adobe Document Services can provide incremental value to IBM customers by extending business processes, providing better interaction between systems, and improving communications with partners and customers.

Adobe Intelligent Document Platform Optimized for IBM WebSphere

The Adobe Intelligent Document Platform, built on the standard J2EE foundation, is integrated with and optimized for the WebSphere Application Server. This optimization enables enterprises to maximize the performance, features, and availability of Adobe Document Services by using the highly reliable and scalable WebSphere Application Server to host them.

Adobe Document Services running on WebSphere enable the enterprise to use Intelligent Documents with business processes to integrate a variety of disparate business systems so that information in forms can efficiently be shared and reused.

WebSphere offers integrated support for key Web services open standards, such as Simple Object Access Protocol (SOAP); Universal Description, Discovery and Integration (UDDI); and Web Services Description Language (WSDL)—making WebSphere a leading production-ready Web application server for the deployment of enterprise Web services solutions. Adobe Document Services supports these open standards and the powerful interoperability offered by WebSphere between Web services and J2EE applications, which can enable key solution offerings for collaboration, B2B, portal serving, content management, commerce, and pervasive computing.

WebSphere also offers superior connectivity with the J2EE Connector Architecture (JCA). Enterprises can use this connectivity with Adobe Document Services to integrate Intelligent Documents with SAP®, PeopleSoft®, Oracle®, J.D. Edwards, IBM CICS®, IBM IMS™ and IBM Host On-Demand applications, through a corresponding set of IBM adapters.

In addition to optimizing Adobe Document Services for WebSphere, Adobe and IBM have also integrated Adobe Designer with WebSphere Studio Application Developer, providing a single, familiar development environment for integrating documents and mission-critical business processes. WebSphere Studio provides development tools for building and deploying specialized application environments (such as portals) and custom Web applications that include the ability to allow users to access, fill out, and submit forms over the Web.

WebSphere Studio includes a comprehensive integrated development environment for visually designing, constructing, testing, and deploying Web services, portals, and J2EE applications. WebSphere Studio accelerates J2EE development with templates, wizards, and a comprehensive visual XML development environment for building document type definitions (DTDs), XML schemas, XML, and Extensible Style Language (XSL) files. It also supports integration of relational data and XML.

Adobe and IBM will further integrate technologies across IBM's portfolio of software offerings, including integration with IBM WebSphere Portal¹ and the Tivoli® software brands. The road map for integration includes the Linux® operating system and IBM hardware platforms. In addition, Adobe Output Pak for mySAP.com® can be easily integrated with archives within the IBM DB2® CommonStore for SAP.

¹ The recently launched Adobe site on IBM DeveloperWorks offers resources to help developers (<http://www-106.ibm.com/developerworks/websphere/partners/adobe/adobe.html>).

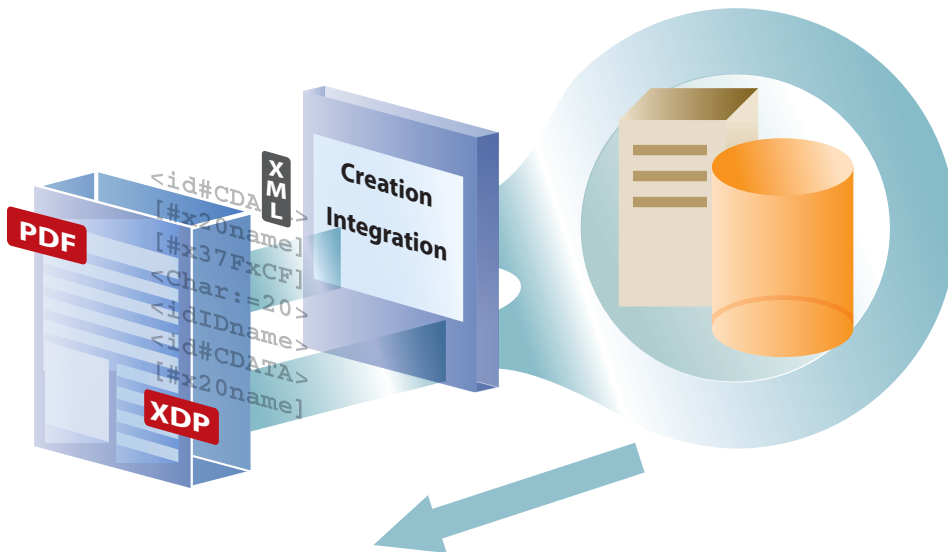
Using Intelligent Documents with Processes

The Intelligent Document architecture combines the advantages of XML with the rich presentation and document control of PDF, making it easier for employees and customers alike to access and interact with enterprise data. The XML layer in PDF enables data integration between core systems and document processes. Anyone with Web access can use the Adobe Reader as a universal client to view and manipulate familiar forms as the front end to enterprise applications. Organizations can work with customers and partners in the way those constituents prefer—using desktops or laptops (running a Windows, UNIX, Linux, or Apple® Macintosh® operating system), PDAs, or mobile phones—through the universal Adobe Reader client.

Information can move swiftly and simply among enterprise applications using industry-standard XML. Automating this information transfer among applications ensures that managers have the latest information for accurate and up-to-date forecasting, better decision-making, and improved service.

Designing Forms to Use as Intelligent Documents

Enterprises use Adobe Designer to design and convert forms into PDF-based Intelligent Documents that can be integrated with business processes using WebSphere Studio. Once the template design is complete and all visual and interactive elements have been added, the Intelligent Document is ready for deployment as either a downloadable PDF file that can be filled in offline with Adobe Reader, or an HTML page readable in any browser.



Adobe PDF retains the visual and format integrity of the original paper or digital document, including layout, fonts, graphics, and even logos. This makes PDF ideal for any situation in which visual integrity is important or (in the case of government agencies or regulated corporations) legally mandated.

Form designers can also use Adobe Document Server for Reader Extensions to add tokens to PDF forms that, when downloaded over the Web, automatically turn on advanced features within Adobe Reader such as digital signatures and offline filling. These features are assigned to that particular document only. They can include the ability to:

- Save the file locally
- Fill out forms and retain a personal electronic copy
- Share documents with others to review and add comments using intuitive markup tools like electronic sticky notes, highlights, and text strike-through
- Sign, certify, and authenticate documents by applying digital signatures, using industry standard technologies
- Submit the document electronically

Adobe provides a plug-in for WebSphere Studio to enable recognition of Adobe forms as valid components within a Java development project. Java developers can automatically launch Designer to edit forms in context. Developers can include URL or Java Server Page (JSP) references to forms in custom Web applications, using the form as a medium for people to enter information and interact with the application.

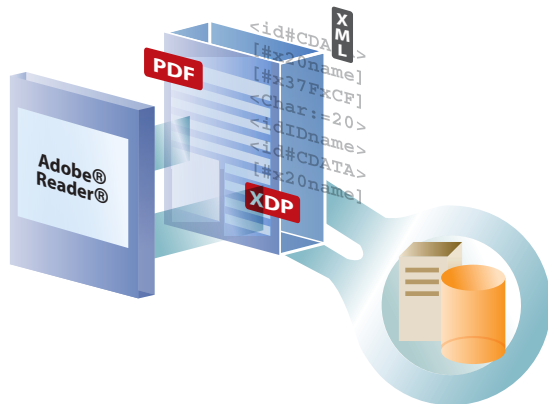
Generating Intelligent Documents Integrated with Processes

Adobe Document Services, running on WebSphere Application Server, merge multiple file formats and XML data with templates to generate Intelligent Documents. Adobe Document Services combine XML schema and the Adobe PDF presentation layer into an XML Data Package (XDP), which creates intelligent, actionable forms.

Intelligent Documents have the same look and feel as static forms, but can also include important enterprise data and business logic to allow for pre-population (pre-filling information such as customer names or account numbers) and automatic calculations (such as mortgage interest rates).

What makes these forms *intelligent* is the ability to define business logic within the form. An example of this kind of business logic might be, “If this person doesn’t review this form within two days, route it to the next person on the review list.” By using business logic within the form, an enterprise can speed up business transactions and reduce delays in getting products to market.

Pre-populated forms can provide a front-end interface for managing business processes with custom Web applications and for interacting with Web services. Forms can be integrated with enterprise systems through Web services so that data entry events trigger an associated workflow.

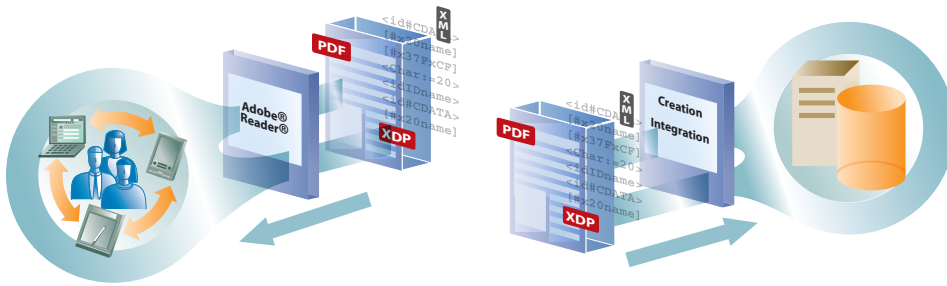


Forms can also be used in WebSphere Portal Server deployments so that form-filling and submission can be included as features on a portal page.

Deploying Intelligent Documents for Interacting with Processes

Enterprises can choose different ways to deploy Intelligent Documents for filling out forms and interacting with processes. Developers can use forms created in Designer with Web services developed in WebSphere Studio to link form-filling activities with back-end transactions (such as data lookups). Portal applications developed with WebSphere Portal or custom applications built with WebSphere Studio could link to forms. Such forms could be either Web pages that are filled out online or downloadable PDF files that are filled out offline with Adobe Reader.

To open and use Intelligent Documents, people can use any device that can run the freely available Adobe Reader universal client, which provides offline access as well. When they open a rights-enabled form within Adobe Reader, they can implement any special privileges that were assigned to them using Adobe Reader Extensions.



PDF documents can be routed to a list of people, retaining embedded rights so that the next recipient has the same functionality enabled. As information is added or updated, the document serves as a vehicle for returning the information to the enterprise applications, and the enterprise avoids costly and error-prone manual data entry.

In particular, Adobe Document Services can expedite the delivery and use of Intelligent Documents in traditional forms-based processes such as loan applications for banking customers or claims processing for insurance companies. Enterprises can ensure availability of critical forms-based processes by running Adobe Document Services on the highly scalable and reliable WebSphere Application Server.

Key Solution Capabilities

The most important capabilities of the Adobe and IBM solution are the ability to:

- *Integrate users, documents, and processes.* Adobe Document Services are optimized for WebSphere Application Server and WebSphere Portal Server, enabling organizations to securely integrate documents with mission-critical business processes. Capturing and exchanging forms data in XML enables organizations to efficiently share data across enterprise applications.
- *Simplify form design.* Adobe Designer is an easy-to-use graphical design tool that allows business users to quickly create sophisticated XML-based Intelligent Documents. Enterprises no longer need to perform costly custom Java development to design Intelligent Documents that integrate employees, customers, or suppliers with business processes resident in WebSphere.
- *Ease form deployment.* After creating rich forms with Adobe Designer, users can easily deploy those forms to custom Web applications and environments using IBM WebSphere Studio. As a result, organizations can deploy forms faster by leveraging existing development tools and skills.
- *Enhance document security.* Intelligent Document solutions let organizations extend security capabilities at the system and document levels to protect sensitive information inside and outside the enterprise. The document control and security features extend an enterprise's internal authentication and authorization model to provide additional document-level security for information collected from or delivered to users over the Internet.

Features, Capabilities, and Benefits

FEATURE	CAPABILITY	BENEFITS
Common work environment and easy-to-use tools	Deploy Web-based forms easily into custom Web applications and user environments with WebSphere Studio	<ul style="list-style-type: none"> • Faster ramp-up for IT personnel by minimizing the learning curve • Ability to leverage existing development tools and skills • Faster development and reduced need for costly custom Java programming
Form-based business process automation	Create and manage forms and forms-based business processes for use across the extended enterprise, on any device	<ul style="list-style-type: none"> • Improved customer communications • Increased ability to offer new services over the Web • Instant deployment inside and outside the enterprise without training or special software • Ability to interact with suppliers and business partners more efficiently • Streamlined internal business processes • Less reliance on paper while retaining the benefits of paper, such as familiar look and feel
Extend processes outside the firewall	Extend business processes outside the firewall to customers and other constituents on the Web	<ul style="list-style-type: none"> • Improved customer communications • Delivery of new services to customers • Improved partner collaboration
Built-in business logic	Maintain and enforce business rules and process logic on forms, even when they reside outside the firewall	<ul style="list-style-type: none"> • Increased efficiency by moving information through approval processes faster • Increased data accuracy by enforcing business rules on data entry • Quicker form-filling with pre-populated forms
XML data integration	Enable efficient data sharing across enterprise applications with XML-based forms data	<ul style="list-style-type: none"> • Better, real-time insight into critical business information • Increased ability to react quickly to new information • More efficient sharing of information among business systems • Easier compliance with industry-standard data schema such as ACORD® standards for the insurance sector
Document control and security	Extend security capabilities at the system and document levels to protect sensitive information inside and outside the enterprise	<ul style="list-style-type: none"> • Greater control over forms security, even after documents have been distributed outside the organization • Improved data integrity by authenticating and authorizing data that is collected from or delivered to users over the Internet • Ease of achieving and maintaining compliance with legislative mandates

FEATURE	CAPABILITY	BENEFITS
PDF and XML for Intelligent Documents	Design intelligent, interactive, and visually rich paper-like forms easily that people can use to interact with business processes	<ul style="list-style-type: none"> • Faster and easier data entry using forms that look like paper versions • Higher quality and value of collected data by reducing form-filling errors • Appealing, visually rich forms with paper-like appearance that include corporate elements • Ability to provide valuable new services to customers, suppliers, and business partners
Fast and easy form completion	Fill out forms in the application environment without requiring users to switch between the form and the application	<ul style="list-style-type: none"> • Seamless user experience

Conclusion

Adobe and IBM have developed a joint solution that enables enterprises to communicate more effectively, automate document-based processes, maintain process familiarity, access systems offline, share information securely, and exchange data and information with people and systems. Optimized for IBM WebSphere, the market-leading application server, the Adobe Intelligent Document Platform provides Intelligent Documents that can be used throughout the IBM middleware application stack to extend business processes, provide better interaction between systems, and improve communications with partners and customers.

With combined Adobe and IBM solutions, enterprises can now maximize their enterprise infrastructure while they interact with customers, suppliers, partners, and constituents. The Adobe Intelligent Document Platform, optimized for IBM WebSphere, automates and accelerates the flow of business-critical information to deliver highly secure business services on demand to any constituency inside or outside the firewall—establishing a new standard in business agility and customer responsiveness.

Appendix

Supported Platforms and Environments

Adobe Form Server 6.0

- Windows 2000 Advanced Server
- Windows 2003

Adobe Document Server for Reader Extensions (optional)

- Windows NT® 4 or Windows 2000
- Sun Solaris™ 7 or 8

Adobe Designer 6.0

- Windows 98
- Windows 2000
- Windows XP
- Windows NT

Adobe Acrobat

- Windows 98
- Windows 2000
- Windows XP
- Windows NT
- Macintosh

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